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Influence of Chemical Additives to Building Mix and Concrete

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ABSTRACT: This article provides information on the chemical additives used in the preparation of concrete products and construction mixtures.

KEY WORDS: Concrete, chemical additives, mortar, convenient stack ability, physical and mechanical properties.

I. INTRODUCTION

Recently, the Republic of Uzbekistan has become a huge construction site.

In our Republic, in every region in a wide area, construction work has begun in the areas of residential buildings, industrial and public buildings.

Moreover, for this improvement the production of modern building materials for the implementation of promising projects, technical and technological re-equipment of enterprises is a requirement of the present.

The use of chemical additives is the easiest and easiest way to improve the properties of concrete. Their application makes it possible to significantly improve the quality and service life of products, significantly reduce the cost of production of reinforced concrete structures.

Therefore, in the developed countries of the world great interest is paid to the use of concrete with chemical additives in the construction industry.

II. RELATED WORKS

At present, the proportion of concrete with chemical additives in Japan is 80%, and in the USA, Germany, France and Italy it is more than 70%.

Currently, a unified classification of chemical additives for concrete and cement mortars has not been adopted on a global scale.

Different countries have adopted different classification schemes for chemical additives. Along with the CIS countries in Uzbekistan, the chemical compound for concrete and mortar according to GOST 24211 - 103 is divided into two groups:

The first group includes additives normalizing the properties of finished building and concrete solutions. These include plasticizers (superplasticizers), additives, stabilizing additives, normalizing sediment of concrete cones, porous (foaming, gas-forming, air-blowing) additives.

The second group includes additives that change the properties of building mixtures and concrete. These include additives normalizing (accelerating, slowing down) the hardening kinetics, additives that increase strength, reduce heat conductivity, increase the properties of reinforcement protection, and increase the frost resistance of mortars and concrete.

To which group chemical additives belong is determined by the requirement of GOST 30459.

III. METHODS

A polycarboxylate-based superplasticizer is the most effective, for example: GLENIUM superplasticizer (BASF, Germany) is a very effective chemical additive.

The following is a mechanism for the effect of these additives on cement systems.

To improve the properties of concrete and reinforced concrete, the choice of chemical additives is not an easy task. Therefore, the development by specialists of the mechanisms of the influence of chemical additives on cement mortar and concrete.

Effect on concrete compressive strength of chemical additives “Betong strong-17”.

1- table

Name of samples	Creep of concrete solutions (sm) OK,	Average density (g / sm3)	The ratio of chemical additives to the mass of cement, (%)	Concrete compressive strength (MPa), days			
				c	c	c	R _c
						4	28
Without chemical additives (control sample)	4,5	2.27	0	4.8	5.7	6.6	26.9
With chem. additives “Betong strong-17”	5.8	2.30	1	5.3	6.3	7.8	28.0

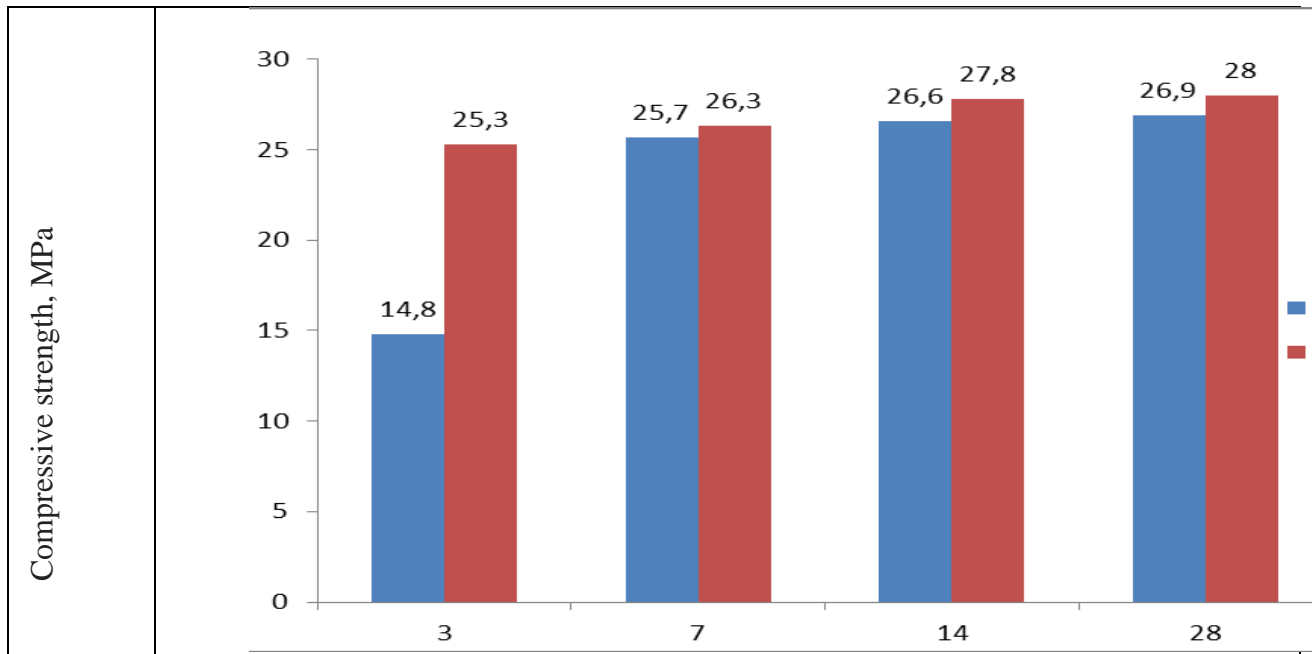


Рис.-1. Effect of Betong strong-17 chemical additive on concrete compressive strength.

1-without chemical additives (control sample). 2-with chemical additive (1%).

IV. CONCLUSION

In conclusion, we can say that much attention is now being paid to improving the mechanical properties of concrete. The implementation of measures using a new generation of superplasticizers, hyperplasticizers and complex chemical additives for concrete technology to serve reduces the time of technological processes, improves quality and increases the service life of products. These events are the main direction of scientific and technological development of the production of concrete and reinforced concrete products. The inclusion of superplasticizers in concrete significantly improves the creep of concrete mortars and the physicommechanical and operational properties of concrete.

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